Effect of age on speeded performance in a 4-choice reaction time task

Effect of Age on Speeded Performance in a 4-choice Reaction Time Task: The Bowed Serial Position Effect

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This study examined the effect of age on reaction time performance in a 4-choice reaction time task. A total of 80 men and 60 women were classified into six age groups (25-35-45-55-65-75 years). The stimulus always appeared in one of four possible, linearly arranged, stimulus positions. The subject's task was to respond as quickly as possible to the stimulus by pressing the appropriate response key. Results showed that advancing age affected reaction time differentially for the four different stimulus positions. Specifically, the younger adults of 25 and 35 year showed similar reaction times in all four stimulus positions; older age groups, on the other hand, showed disproportionally longer reaction times to the inner than to the outer positions. In other words, advancing age seemed to transform an initially flat serial position curve into an increasingly bowed serial position curve. Possible mechanisms of this age-related bowed serial position effect are discussed.

Reaction Time Performance in Different Perception-Action Couplings

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The goal of this study was to contrast and test predictions derived from information-processing and ecological perspectives by manipulating stimulus-response (affordance) compatibility. Using a four-choice reaction time paradigm, we determined response latencies of three different types of responses (i.e., a pointing, finger-lift, or vocal response), all mapped onto the same spatial stimuli. Results showed that reaction time of the more natural (i.e., affordance compatible) pointing response was more than 100 ms shorter than that of the more artificial finger and vocal responses. Importantly, the latter showed striking serial position effects while latency of the pointing response was independent of target position. These results were interpreted as suggesting that the specific nature of the stimulus-response relationship may determine whether an intermediate, stimulus-response translation, stage is needed to link perception and action, or that it is bypassed, allowing direct perception-action routines to guide performance. We conclude that the information-processing and the ecological frameworks are not mutually exclusive but complementary in that they address different kinds of perception-action phenomena.